



(19) Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number: EP 0 486 214 A3

(12)

EUROPEAN PATENT APPLICATION

(21) Application number: 91310283.6

(51) Int. Cl.⁵: C12N 15/54, C12N 9/10,
C12N 15/11, C12N 5/10,
A01H 5/00

(22) Date of filing: 06.11.91

(30) Priority: 14.11.90 US 613160

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(43) Date of publication of application:
20.05.92 Bulletin 92/21

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(84) Designated Contracting States:
AT BE CH DE DK ES FR GB GR IT LI NL SE

(88) Date of deferred publication of search report:
19.11.92 Bulletin 92/47

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(54) Putrescine N-methyltransferase, recombinant DNA molecules encoding putrescine N-methyltransferase, and transgenic tobacco plants with altered nicotine content.

(57) There is provided highly purified tobacco putrescine N-methyltransferase, a process for its purification, and production of PMT DNA sequence. The purification process includes the step of applying a tobacco root extract to an anion exchange medium and specifically eluting putrescine N-methyltransferase with an elution buffer comprising putrescine.

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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. CL.5)
D,X	CHEMICAL ABSTRACTS, vol. 76, 1972, Columbus, Ohio, US; abstract no. 55697, MIZUSAKI, S., ET AL.: 'Phytochemical studies on tobacco alkaloids. XIV. Occurrence and properties of putrescine N-methyltransferase in tobacco roots' * abstract * & PLANT CELL PHYSIOL. vol. 12, no. 4, 1971, pages 633 - 640;	1,2 15-23	C12N15/64 C12N9/10 C12N15/11 C12N5/10 A01H5/00
Y	EP-A-0 240 208 (CALGENE) 17 October 1987 * page 4, line 27 - line 28	15,17, 19-21,23	
Y	PLANT MOLECULAR BIOLOGY, vol. 15, no. 1, July 1990, DORDRECHT, THE NETHERLANDS, pages 27 - 38; HAMILL, J.D., ET AL.: 'Over-expression of a yeast ornithine decarboxylase gene in transgenic roots of Nicotiana rustica can lead to enhanced nicotine accumulation' * page 37, right column, paragraph 1 *	15,16, 18,20-22	
D,A	CHEMICAL ABSTRACTS, vol. 105, 1986, Columbus, Ohio, US; abstract no. 112135, FETH, F., ET AL.: 'Regulation in tobacco callus of enzyme activities of the nicotine pathway. I. The route ornithine to methylpyrrolidine' * abstract * & PLANTA vol. 168, no. 3, 1986, pages 402 - 407;	1-23 -/-	C12N A01H
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	16 SEPTEMBER 1992	MADDOX A. D.	
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
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A : technological background			
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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. CL.5)			
A	<p>CHEMICAL ABSTRACTS, vol. 92, 1980, Columbus, Ohio, US; abstract no. 177499, OHATA, S., ET AL.: 'Metabolic key step discriminating nicotine production callus strain from ineffective one' * abstract * & BIOCHEM. PHYSIOL. PFLANZ. vol. 175, no. 4, 1980, pages 382 - 385;</p> <p>-----</p> <p>CHEMICAL ABSTRACTS, vol. 106, 1987, Columbus, Ohio, US; abstract no. 99481, WAGNER, R., ET AL.: 'The regulation of enzyme activities of the nicotine pathway in tobacco' * abstract * & PHYSIOL. PLANT. vol. 68, no. 4, 1986, pages 667 - 672;</p> <p>-----</p> <p>THE PLANT CELL, vol. 2, no. 1, January 1990, ROCKVILLE, MD, USA, pages 7 - 18; LAGRIMINI, L.M., ET AL.: 'Peroxidase-induced wilting in transgenic tobacco plants' * page 16, left column, last paragraph *</p> <p>-----</p>	1-23				
A		15, 16, 18, 20-22	TECHNICAL FIELDS SEARCHED (Int. CL.5)			
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<table border="1"> <tr> <td>Place of search THE HAGUE</td> <td>Date of completion of the search 16 SEPTEMBER 1992</td> <td>Examiner MADDOX A. D.</td> </tr> </table>				Place of search THE HAGUE	Date of completion of the search 16 SEPTEMBER 1992	Examiner MADDOX A. D.
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